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UNITED STATES DEPARTMENT OF AGRICULTURE

Rural Electrification Administration

Finance Division

Washington 25, D. C.

FOR ADMINISTRATIVE USE

THEORY OF
DEPRECIATION, FIXED ASSETS, AND UNCOLLECTIBLE ACCOUNTS

Text No. 7

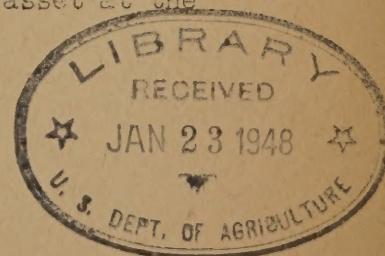
1. DEPRECIATION

In making adjustments at the close of a fiscal period, consideration must always be given to the fact that fixed assets--property held for use in a business enterprise, such as buildings, machinery, trucks, furniture and fixtures, etc.--are gradually decreasing in value due to wear and tear and lapse of time. This gradual expending of property values resulting from use and other causes is called "depreciation." In considering the subject of depreciation, it should be observed that no reasonable amount expended for maintenance and repairs can postpone indefinitely the time when an asset must be discarded. A loss from depreciation is constantly taking place, and ordinarily this is not recorded until the end of an accounting period. It follows that the value of fixed assets as shown in the pre-closing trial balance is always overstated. In other words, accounts set up for fixed assets--except land which is considered non-depreciable--will, at the close of an accounting period, always be mixed accounts involving both a real element and a nominal element that should be separated by adjusting entries before the books are closed and final statements prepared.

The question presents itself: How can we determine the amount that a particular fixed asset has decreased in value due to use and other causes during an accounting period? One way would be to make an appraisal at the close of the period and to write off as depreciation the difference between the value of the asset at the beginning of the period and at the close of the period. However, appraisals for fixed assets should be undertaken only by expert appraisers and consequently an appraisal is costly to the average business. Furthermore, appraised values may fluctuate with the purchasing power of the dollar and with other factors that the accountant ordinarily does not choose to recognize in the books. Accounting as a rule holds that depreciation is that amount of loss in value of property which occurs during the period as a result of operations and the lapse of time.

In order to compute the nominal element of depreciation in asset accounts--that is, the loss of value due to depreciation for a given period--three factors are considered with regard to each asset:

- (1) Original cost of the asset;
- (2) Estimated useful life, stated in time period such as years or months;
- (3) Estimated scrap or residual value--the value of the asset at the end of its useful life.



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When these factors are known, the periodic amount of depreciation to be written off against any particular asset is arrived at by application of the following formula:

$$\frac{\text{Cost minus Scrap Value}}{\text{Time Periods (Useful life)}} = \text{Depreciation for the Period}$$

This is known as the straight-line method of computing depreciation and is the one most commonly used. In practice, a small residual value may be ignored, with only the cost value of the asset being considered.

Accounting for depreciation is comparatively simple after the reduction in the value of an asset has been estimated. As an example, a building is entered on the books at \$5,000 and its life is estimated at forty years. Applying the formula, depreciation is computed at 2½% of cost price or \$125 a year. This may be recorded in either of two ways:

- (1) By decreasing the asset value each year by the amount of depreciation;
- (2) By setting up a new account closely related to the fixed asset, called a valuation account, Reserve for Depreciation, in which are accumulated the periodic credits from depreciation.

Under the first method, the nominal element is taken out of the fixed account by a journal entry debiting Depreciation and crediting the Building account. Under the second method, which is considered the better, a valuation account, Reserve for Depreciation, is set up to reflect the credits for estimated depreciation:

	(Date)	Dr.	Cr.
Depreciation		\$ 125.00	
Reserve (or allowance) for			
Depreciation of Building			\$ 125.00
Estimated depreciation of building			
for year of 194- at 2½% on cost.			

If a valuation account is used it means that the asset is recorded in two accounts: the asset account proper, which carries the cost as a debit, and the valuation account, which accumulates the depreciation reflected as a credit. The Depreciation expense account is closed to Profit and Loss each year, while the valuation account remains on the books and its balance increases each year. The valuation account as a rule is shown on the balance sheet as a deduction from the related asset.

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In some instances, wear and tear is a more important element than the lapse of time in determining depreciation sustained. Another method that may be used is based upon the units of product manufactured, hours of actual operation during the period, or some other unit of service, such as mileage with regard to operation of a maintenance truck. The formula is:

$$\frac{\text{Cost minus Residual value}}{\text{Estimated total units of service}} \times \frac{\text{Units of service during period}}{\text{Times}} = \text{Depreciation for period}$$

For example, a factory may have machinery with an estimated life of from six to ten years depending upon the hours of actual operation or units of product manufactured. If the machinery is in constant use, it will be worn out within a few years; otherwise, it need not be replaced for a longer period of time. It would seem that depreciation based on the actual operations compared to the expected operating life is more in accordance with the facts than some straight-line estimate, unless production is fairly constant.

Other methods of computing depreciation may be occasionally encountered in practice; but the straight-line method is most common because it is easy to apply and under this plan cost of the asset is charged evenly over the time periods of the estimated useful life. The straight-line method is the one ordinarily employed in the REA accounting system.

2. ACCOUNTING TREATMENT FOR FIXED ASSETS

The following problem and solution will clarify several important points in connection with fixed assets.

Upon beginning business January 1, 1943, the Berewell Grocery purchased store fixtures and equipment costing \$1,000. It was estimated that the useful life of these assets would be 12½ years. Additional equipment costing \$250 was purchased September 1, 1944, and the equipment was installed for \$50; on April 1, 1945, a cabinet bought originally for \$100 was traded in on a larger cabinet costing \$200, trade-in allowance of \$50 being received. The asset account and reserve for depreciation as of December 31, 1945, would appear as follows:

Store Fixtures and Equipment					
1943			1945		
Jan. 1	Cost	1 000 00	Apr. 1	Cabinet traded in	100 00
1944					
Sept. 1	Equipment	250 00	Dec. 31	Balance	1 400 00
1945	Installation	50 00			
April 1	Cabinet	200 00			
		<u>1 500 00</u>			<u>1 500 00</u>
1946					
Jan. 1	Balance	1 400 00			

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Reserve for Depreciation of Store Fixtures and Equipment						
1945			1943			
Apr.	1	Cabinet traded in	18	00	Dec. 31	80 00
Dec.	31	Balance	260	00	1944	
					Dec. 31	88 00
					1945	
					Apr. 1	2 00
					Dec. 31	108 00
			278	00	278 00	
					1946	
					Jan. 1	260 00

The first step is to determine the rate of depreciation. Inasmuch as residual value is ignored, a life of 12½ years gives a rate of 8% a year (100% divided by 12½). The books are closed annually; hence 8% of the cost is to be taken each year on assets owned for that length of time and a proportionate amount for assets owned less than one year. For example, as of December 31, 1943, the amount debited to Depreciation expense and credited to the reserve was 8% of \$1,000 or \$80. This can be developed by application of the formula given:

$$\frac{\$1,000 \text{ (cost) minus (scrap value) } 0}{12\frac{1}{2} \text{ (years expected life)}} = \$80 \text{ depreciation for the year.}$$

On December 31, 1944, depreciation is 8% of \$1,000, or \$80, on assets owned for the year, and 4/12 of 8% of \$300, or \$8, on the equipment purchased. The total is \$88. The equipment purchased September 1, 1944, cost \$250 plus \$50 for installation. The general rule is that all costs up to the point of placing an asset in use are properly chargeable to the asset account; therefore, freight, installation and other similar costs on assets purchased are debited to the asset account and recovered through the periodic charges for depreciation.

When the new cabinet was purchased April 1, 1945, and the old cabinet traded in, it was first necessary to find the book value of the latter as of trading date. Accordingly, depreciation may be recorded on the old cabinet to the date traded in:

	April 1, 1945	Dr.	Cr.
Depreciation (expense)		\$ 2.00	
Reserve for Depreciation of Store			
Fixtures and equipment			\$ 2.00
Depreciation to date on cabinet traded in, 3/12 of 8% of \$100, original cost.			

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The total credits in the reserve for depreciation applying to this cabinet are \$18.00--8% of \$100, or \$8, a year for two years and \$2 for the fraction of a year. The book value then is \$82--original cost \$100 less \$18 accumulated depreciation. The trade-in allowance is only \$50. Therefore, a loss of \$32 is sustained. While this loss may not be recognized for income tax purposes, the usual accounting procedure is to take the loss as a reduction of capital either directly or indirectly through a nominal account. The journal entry for the purchase of the new cabinet would be:

April 1, 1945	Dr.	Cr.
Stores Fixtures and Equipment	\$200.00	
Reserve for Depreciation of Store		
Fixtures and Equipment	18.00	
Capital (loss on trade-in)	32.00	
Store Fixtures and Equipment		\$100.00
Cash		150.00
Purchase of new cabinet, \$50 allowance on old cabinet (book value \$82) and balance paid in cash.		

Some bookkeepers separate the compound entry above into two or more entries, but the principles involved are the same: (1) to clear the reserve for estimated depreciation to date on the asset disposed of; (2) to clear the asset account of the cost of the asset disposed of. The new asset was acquired at a specified price; hence, the asset account is debited for that amount.

Depreciation on the new cabinet to December 31, 1945, is $\frac{9}{12}$ of 8% of \$200, or \$12, and depreciation at 8% on \$1,200 assets owned for the entire year is \$96. The total, \$108, is charged to depreciation expense in addition to the \$2 entry of April 1.

At December 31, 1945, the asset account and related reserve will be shown on the balance sheet thus:

Store Fixtures and Equipment	\$1,400.00	
Less: Reserve for Depreciation	<u>260.00</u>	\$1,140.00

3. UNCOLLECTIBLE ACCOUNTS (Bad Debts)

Whenever goods are sold on credit, a number of unpaid customers' accounts may appear upon the books at the close of an accounting period. If the proprietor of a business believed that all the accounts receivable were collectible an adjustment would be unnecessary, but the average business man knows that some of the accounts may never be collected. He does not

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know the exact amount, nor does he know which particular accounts will prove worthless. He does know that there is a possible loss connected with accounts receivable. The question then arises as to what disposition should be made of this probable loss at the close of an accounting period. Of course, the question may be deferred until losses materialize. In that event nothing would be done until an account was actually determined to be worthless. Then the following entry would be made:

	(Date)	Dr.	Cr.
Bad Debts		xxx	
Customer's account (acct. receivable)			xxx
To write off the account of (customer's name) now determined uncollectible.			

This method of writing off bad debts as they occur is subject to two fundamental objections:

- (1) It seldom charges the loss against the period which caused the expense--that is, the period in which the sale was made.
- (2) It fails to show the estimated realizable value of customers' accounts receivable on the closing balance sheet.

A better procedure is to estimate the loss in advance and set up a valuation or reserve account. To illustrate: Assume that accounts receivable, as shown by the books at the close of an accounting period, aggregate \$8,000 and that 2% of this amount is estimated to be uncollectible. In order to give recognition to this fact, the following adjusting entry is made:

	(Date)	Dr.	Cr.
Bad Debts		\$160.00	
reserve for Bad Debts			\$160.00
To record provision for doubtful accounts receivable, 2% of \$8,000 based on previous experience.			

The valuation account is usually designated as a Reserve for Bad Debts, or Allowance for Doubtful Accounts, or Reserve for Uncollectible Accounts. These account titles mean one and the same thing. The valuation account is used to reflect contra credit to Accounts Receivable, since it is not known at the time the reserve is set up which accounts eventually will prove to be worthless. The reserve will be shown on the balance sheet as a deduction from Accounts Receivable, thus presenting as nearly as possible the estimated realizable value of Accounts Receivable at a given date:

Accounts Receivable	\$8,000.00	
Less: Reserve for Bad Debts	<u>160.00</u>	\$7,840.00

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The account Bad Debts is a nominal account and will be closed to Profit and Loss, and the expense will be charged into the period in which the sales were made.

When a particular claim against a customer proves uncollectible in a subsequent period, the journal entry will be:

	(Date)	Dr.	Cr.
Reserve for Bad Debts		XXX	
Customer's account receivable			XXX
To write off the account of (customer's name) now determined uncollectible.			

Notice that this entry does not affect the net value of Accounts Receivable because both the accounts and the reserve for bad debts are reduced by a like amount. In other words, this entry does not affect Profit and Loss.

The manner of estimating the loss from uncollectible accounts needs further explanation, and in this connection, it may be said that the approximation of this loss may be made in any one of several ways. Three methods are given below:

Method I:

Prepare a list of all customers' accounts classifying them into three groups: good, doubtful, and bad. Then take as the charge to bad debts the total of accounts classified as bad plus one-fourth to one-half of the doubtful items, and credit the reserve for bad debts this amount. Accounts now determined worthless are written off to the reserve, leaving its balance as a valuation account applicable to doubtful receivables.

When the proper follow-up is made on accounts receivable past due, such accounts will have been segregated for special collection effort. The estimate of bad debts under these circumstances may be based upon classification of past-due accounts only as good, doubtful, or bad. Accounts not past due may be assumed collectible.

Method II:

When accounts receivable are numerous, or it is not desired to classify the accounts, results similar to Method I can be obtained by the following method:

- (1) Ascertain the actual bad debt losses for a series of past periods, and ascertain the amounts of receivables at the end of the same periods;

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- (2) Calculate the average losses from bad debts in terms of percentage by dividing bad debt losses by the amounts of receivables;
- (3) Multiply the open accounts at the close of the current period by the percentage of past losses, to estimate bad debts for the period.

Method III:

- (1) Ascertain the actual bad debt losses for a series of past periods, and ascertain the amounts of charge sales for the same periods;
- (2) Calculate the average losses from bad debts in terms of percentage by dividing bad debt losses by the amount of charge sales;
- (3) Multiply the charge sales for the current period by the percentage of past losses, to estimate bad debts for the period.

Comment:

Method I, classifying or aging the accounts, gives a good valuation of customers' accounts as to their expected realizable value; and if all accounts open at the end of the period are from sales of that period, the charge for bad debts is taken up in the same period as the sales. When it is not desired to evaluate each account as to its collectibility, Method II secures results similar to Method I. Method III unquestionably places the charge for bad debts in the same period as the sales on open account and is in common use when the books are closed monthly. It may be added that if charge sales and cash sales are not segregated, total sales may be used in the calculation, provided the percentage of charge sales remains constant in the several periods.

After an estimate is made, as indicated above, the manner of handling the reserve must be decided upon. Should we add to the reserve the amount estimated as bad debts, irrespective of any balance that the reserve may contain as a carry-over from past periods, or should we add to the reserve an amount to make it reflect the bad debt estimate? Both methods are in common use.

If we add to the reserve the amount estimated as bad debts, the journal entry would be:

	(Date)	Dr.	Cr.
Bad Debts		\$275.40	
Reserve for Bad Debts			\$275.40
Addition to reserve based upon $\frac{1}{2}\%$ of charge sales for the period, \$55,080.			

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On the other hand, if a credit balance carried over in the reserve is taken into consideration, the journal entry would be:

	(Date)	Dr.	Cr.
Bad Debts		\$230.65	
Reserve for Bad Debts			\$230.65
Addition to reserve based upon 2%			
of the open accounts at the close			
of the period, \$13,805	\$276.10		
Less balance in reserve	45.45		
Charge to bad debts	\$230.65		

Under the first entry, a reserve is in effect provided for estimated losses of each period, and any credit balance in the reserve presumably applies to accounts of prior periods still open on the books. The second entry provides a reserve for doubtful accounts open at the end of the period. As to which procedure should be followed, nothing definite can be said except that the reserve should be reasonable in view of all the facts. Current business conditions, practices in extending credit, collection policies, and other similar factors must be taken into consideration. An excessive reserve should not be accumulated, nor should the allowance clearly be inadequate.

In the REA accounting system the Reserve for Uncollectible Accounts is set up as of a certain date by means of calculating the estimated losses on existing accounts receivable from consumers. The probable losses are established by application of arbitrary percentages to the various classes of delinquent accounts which have been grouped by age.

The reserve, once established, is continued by applying a percentage rate to the monthly gross revenue and making a journal entry debiting Uncollectible Consumers' Accounts and crediting reserve for Uncollectible Consumers' Accounts for the estimated loss thus obtained. The rate used is derived by dividing the total amount lost on bad debts to the date at which the reserve was established by the gross revenue of the system to that date.

Notes receivable as well as open accounts sometimes are to be considered in estimating bad debt losses. When a concern follows the policy of closing old accounts by requesting notes, or normally carries a large amount of notes receivable, the probable loss on notes should be estimated and included when making the adjusting entry. Where the bad debt allowance takes into account both classes of receivables, the valuation account should appear on the balance sheet as a deduction from both accounts and notes receivable:

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Accounts Receivable	\$14,652.85	
Notes Receivable	8,350.00	
Total	23,002.85	
Less: Reserve for Bad Debts	460.05	\$22,542.80

4. RECOVERIES ON UNCOLLECTIBLE ACCOUNTS

It seems obvious that if an account were written off as worthless and then collected in the same period, the entry writing off the account was in error and should be reversed. The collection then is recorded as usual by debiting Cash and crediting the customer's account.

When an account charged off as worthless in one period is fully or partially collected in a subsequent period, what should the journal entry be? The answer depends to some extent upon the procedure followed in setting up the reserve for bad debts. It usually is desirable for credit data purposes first to debit the customer's account. Then the offsetting credit may be made to (a) Bad Debt Recoveries--an income account, (b) the Reserve for Bad Debts, or (c) Capital, upon the theory that this is a correction of past error. In view of the fact that the collection of an account charged off as worthless in a prior period may be considered taxable income, it would seem preferable to credit the nominal account, thus:

	(Date)	Dr.	Cr.
Customer's account		xxx	
Bad Debt Recoveries			xxx
To reinstate customer's account written off as uncollectible in a prior period.			
Cash		xxx	
Customer's account			xxx
Collection of account receivable.			

If at the end of the period the charge to bad debts is reduced by any credit balance in the reserve, the Reserve for Bad Debts could be credited in the first entry given. The recovery thus reduces the charge to bad debts expense. However, if a balance in the reserve is ignored in making the charge for bad debts, the nominal account should be credited to reflect the income from the collection, unless it is held that the entry writing off the account originally was in error.